

**HIGH-PERFORMANCE VAPORIZER FOR LIQUID-PRECURSOR
AND MUTLI-LIQUID-PRECURSOR VAPORIZATION
IN SEMICONDUCTOR THIN FILM DEPOSITION**

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ABSTRACT OF THE DISCLOSURE

A vaporization system for thin film formation and for introducing vapors into a deposition chamber for depositing films onto a semi-conductor surface has a vaporization chamber that is selectively
10 provided with at least two different, separate, precursor liquids carried in a gas stream that may be a single carrier gas, or a selected one of a plurality of carrier gasses. When the liquids being introduced are likely to be subject to thermal
15 decomposition from contact with high temperature surfaces, an atomizer is used at the inlet of the vaporization chamber to provide an aerosol to the vaporization chamber from one or more individual sources of liquid combined with one or more
20 individual carrier gasses for simultaneous or sequential introduction into the vaporization chamber. The vaporization chamber may be designed to insure complete vaporization by incorporating a recirculating gas flow through heated passageways
25 before the vaporized gas/vapor mixture exits the vaporization chamber.